For Action

Procurement Authorization – Supply of Special Trackwork for up to a Five-Year Term

Date: February 10, 2022
To: TTC Board
From: Chief Infrastructure and Engineering Officer

Summary

The purpose of this report is to obtain procurement authorization for the award of a contract for the supply of subway special track work (STW) for up to a five-year term, with the option to extend the contract for up to an additional two years. Special trackwork is the common term for turnouts, which allow trains to be diverted from one track to another. These complex arrangements of specialized rail, crossings, hardware and ties are subject to an increased rate of wear and tear.

The TTC's Subway and Scarborough Rapid Transit (SRT) network has approximately 500 locations where STW exists. Components, which are subject to frequent movements, must be maintained within acceptable tolerances and wear limits to avoid derailments and permit the reliable passage of trains. To ensure that the subway STW is maintained in a state of good repair, a capital program exists to replace worn STW components, prioritized on a condition-based approach. The supply of STW includes specialized components that are require for the TTC's Subway/SRT Turnout Rehabilitation State of Good Repair Capital Program.

Recommendations

It is recommended that the TTC Board:

1. Authorize the award of contract to Voestalpine Railway Systems Nortrak Ltd., in the amount of $20,000,000 USD, including applicable taxes (which is equivalent to $25,106,000 CDN), for the supply of subway special trackwork, for a term of five years, commencing upon notification of award, with options to extend the contract term for up to an additional two years at the TTC's sole discretion, subject to satisfactory performance and price negotiations.

Financial Summary

Funding of $61.8 million from 2022 through to 2026 to cover the $25.106 million cost of this contract and ongoing SOGR subway trackwork are included in Project 1.1 Subway/SRT Turnout Rehabilitation Program and other various projects in the TTC's 2022-2031 Capital Budget and Plan, which was approved by the Board on December 20, 2021 and will be considered by City Council on February 17, 2022.

The contract work will be administered on a work assignment release basis. As each required task is identified, a work plan is prepared with an estimate. Work will be authorized only after confirmation that sufficient funds are included for the specific assignment in the TTC's 2022-2031 Capital Budget and Plan.

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Equity/Accessibility Matters

The TTC is committed to providing safe, reliable, accessible and inclusive transit service to all customers, and this is a key facet of the TTC's Corporate Plan 2018-2022. This is supported through the continued work and maintenance of our subway track system. This track work, once completed, will ensure the continued provision of safe, reliable, and inclusive transit service for all customers. Consultation with appropriate stakeholders will continue throughout the project.

Decision History

At its meeting on January 21, 2015, the TTC Board approved the award of a five-year contract for the supply of subway STW to Voestalpine Railway Systems Nortrak Ltd.(Nortrak), in the amount of $19,100,000 USD (which was equivalent to $22,257,230 CDN), for a period ending December 31, 2019, on the basis of the only bid received. Within the contract terms, the TTC reserved the right, at its sole discretion, to extend the contract for up to two additional years. Subsequently, the TTC exercised its optional two-year extension and the contract was extended to December 31, 2021 (no additional funds were added).

https://ttc-cdn.azureedge.net/-/media/Project/TTC/DevProto/Documents/Home/Public-Meetings/Board/2015/January-21/Reports/PA_Supply_of_Special_Trackwork_for_Up_to_a_Five_Year_Term.pdf?rev=fe729e3b3e15420fb6ab671780c1d595&hash=99C6AD08FB74E775B86F3552A8A2A50E

Issue Background

The TTC currently utilizes two types of switch designs: 100ARA-A (AREMA) that dates back to 1954 and 115RE Samson Switch (SS) that dates back to the 1990s. Both types of switch designs used by the TTC have a proven track record and have been refined over the years to extend service intervals due to limited track maintenance windows.

The current switch geometry layouts are unique to the TTC, which is set by the design layout of the tunnel structure dating back to the 1950s. This unique geometry is determined by both the turnout angle, radius and the distance from the switch points to the frog (known as the lead). Under no circumstances can this change as the STW must meet the TTC design prints to allow a switch to fit within the existing tunnel structure and property right of way.

These existing switches are being maintained using the following strategy: if replacing worn components, a like-for-like strategy is utilized, but if replacement the entire turnout is required, the more reliable and readily available SS switch is utilized. The SS switch utilizes UIC54B heavy point switch rail to provide extended wear life as well as a smoother ride, and reduced noise for customers due to its geometry and reduction in joints. Although there are many other standard switch designs/layouts in the market that are used by other transit authorities, the TTC has unique requirements as follows:

- Existing AREMA and SS switches must continue to be maintained within the short maintenance windows;

- Track gauge (distance between the running rails of the track) is not standard. The TTC uses a non-conventional wide gauge of 1,495 mm versus standard 1,435 mm;

- The TTC's switches have an extensive amount of guard rail design features and components as redundancy measures to minimize the possibility of derailments, ensuring the safe passage of trains; and

- Switch machines that drive/actuate the switches are designed for the TTC's unique switch throws (movement of switch when trains change track routes).

Staff have reached out to manufacturers/suppliers to look at alternative switch layouts and determined that other switch designs that are standard (off the shelf) may not fit within the TTC's current network layouts, and will need to be customized to be further evaluated for feasibility. Every switch type in the subway network needs to have an inventory of spare parts. In the event a different switch design is considered, it will result in the TTC needing to stock thousands of additional new items to maintain a new switch type, incurring extra costs to the TTC (real estate, maintenance training, engineering, etc.). These are significant factors to be considered as they relate to the idea of introducing a different switch type into the TTC subway network.

Further, any changes made by Track Engineering would need to be vetted and approved by Signals Engineering, Electrical Engineering, Noise and Vibration Engineering and Vehicle Engineering to ensure switch machine compatibility, proper wheel to rail interaction and safe operation for passengers.

TTC drawings include all the needed information so that any STW manufacturer/supplier can fabricate the components for the AREMA and SS switches, as required by the TTC. Since supply of STW is highly specialized and the supplier base is relatively small, which have contributed to the TTC receiving only one bid in the past, staff exercised due

diligence and researched the marketplace to determine potential sources of supply and the likelihood of these companies participating in future bidding.

The TTC met with H.J. Skelton Canada Ltd. (H.J. Skelton) and the European manufacturer DT representatives whereby DT confirmed at the time they were able to supply material in accordance to TTC specifications. In addition, Metropolitan Transit Authority (MTA), also known as New York City Transit (which has partially similar subway STW) was contacted to obtain the name(s) of companies they utilized to supply their subway STW. MTA purchased STW from Nortrak, Progress Rail and Cleveland Track Material (acquired by Progress Rail Services in 2019).

Based on information received from MTA and marketplace research, the TTC's Procurement and Category Management (PCM) team determined that the market for subway STW specific to TTC is limited only to a few manufacturers i.e. Nortrak, Progress Rail and Atlantic Track & Turnout Co., and potentially European manufacturers, such as DT (represented by H.J. Skelton).

Staff contacted these companies, along with London Trackwork Inc., who are representatives of STW manufacturers to determine the likelihood of these companies participating in future TTC bid proposals. All companies responded and indicated they were interested to review the request and potentially participate in future bidding opportunities.

Comments

A negotiated Request for Bid (RFB) for the supply of subway STW, consisting of a three-stage evaluation process, was publicly advertised on the MERX and TTC websites. Five companies were made aware of this requirement and six companies downloaded copies of the documents, out of which two submitted bids by the closing date of September 10, 2021: London Trackwork Inc. and Nortrak.

The RFB was issued for the design, manufacture and assembly of subway STW, which included subway full turnouts, retrofit switch kit assemblies and typical base units for frog refurbishment, along with various component parts, which are the main base units (building blocks) used to manufacture the larger assemblies.

The RFB indicated the award of a contract would be for a term of up to a five-year period with options to extend the contract up to two additional years (i.e. into years six and seven), at the TTC's sole discretion. The pricing for any extension period will be subject to negotiations and satisfactory performance. Further, the RFB indicated that the successful bidder would be awarded a contract in an upset limit amount based on the TTC's preliminary estimate of the value of the work of approximately $25,000,000 CDN for the five-year supply of STW or a pro-rated amount based on the recommended contract item.

The evaluation of the submissions was based on a staged process consisting of the following:

- Stage 1 – Mandatory Submission Requirements;
- Stage 2 – Evaluation; and
- Stage 3 – Ranking and Contract Negotiations;

Stage 1 – Mandatory Submission Requirements: Consisted of a review to determine which bid submission complied with all the mandatory submission requirements

Bidders were required to comply with four technical requirements to be evaluated on a pass/fail basis (i.e. Corporate Qualifications, Staff Qualification, Engineering capabilities and ISO 9001 certification) and to submit detailed information, including samples of related work. A list of references for whom the bidder has performed similar work was also requested, along with contact information for the reference in order for the TTC to conduct reference checks.

Stage 2 – Evaluation: Consisted of an evaluation of each qualified bid submission on the basis of non-priced criteria

Bidders who received a total minimum combined score of at least 80 points out of 100 points on the non-priced rated criteria would proceed further in the RFB process and moved further to the pricing component of the evaluation. Bidders scoring below the threshold would not be evaluated further and would be disqualified.

Stage 3 – Ranking and Contract Negotiations: Consisted of ranking based on price evaluation

The top ranked bidder (bidder with the lowest total evaluated price) was issued a written invitation to enter into direct contract negotiations to finalize the agreement with the TTC.

Upon completion of the evaluation process, Nortrak was the only qualified bidder, did not state any exceptions or qualifications to the TTC's terms and conditions and their bid is considered commercially and technically compliant.

London Trackwork Inc. (London Trackwork) submitted a bid in U.S. funds and provided the mandatory and evaluated criteria submission requirements. Staff reviewed London Trackwork's submission and determined they did not meet two of the four pass/fail mandatory submission requirements, including the requirement to have a five-year transit-specific experience based on AREMA and SS style STW. As indicated, they can offer VDV/EN design STW instead. London Trackwork submitted the evaluated criteria submission requirements. However, a total score was not calculated as they did not include supporting documentation on all the requirements. In addition, London Trackwork's bid indicated various deviations from the TTC's Specification as follows: use of asymmetric rail section 60E1A1 versus UIC54B; track gauge; use of monoblock frogs vs. Railbound Manganese Welded (RBW) and Railbound Manganese (RBM) frogs; absence of guarding devices on the switches; different switch throws and

absence of switch rollers, etc. As a result, London Trackwork's submission was not evaluated further.

Nortrak submitted the other bid and provided all mandatory and evaluated criteria submission requirements, including supporting documentation. Their submission was quoted in U.S. funds, which was converted to Canadian funds at the exchange rate of 1 USD = 1.2553 CDN (as of October 14, 2021) for evaluation purposes only. Staff reviewed and scored Nortrak's submission and considered it commercially and technically compliant as Nortrak passed all the mandatory requirements and received an overall score 97%. The Stage 3 Ranking and Contract Negotiations process concluded with "Nortrak" selected as the only qualified bidder who was invited to enter into the final round of negotiations to negotiate lower pricing and finalize the agreement with the TTC.

The negotiations with Nortrak resulted in price reductions on most of the complete assemblies and individual sub-assemblies and components, in particular in years four and five, which resulted in overall cost savings of $904,705.12 USD over the five-year term (when compared to the original offer).

Staff contacted the companies who were made aware of the RFB, but did not respond in order to obtain reasons for not bidding. The companies stated that manufacturers they represent from the U.S. who can offer STW to TTC specifications were not able to submit a bid for this type of multi-year contract, and manufacturers from Europe could only offer a different design or that they were not sure they were able to offer a complete and accurate bid, and preferred to work first on smaller opportunities to familiarize themselves with the TTC.

A price comparison with the current contract based on Nortrak's negotiated offer revealed an overall increase of approximately 9.49% (based on USD) and 17.95% (based on CDN) in year one. Nortrak's year-to-year bid pricing based on individual sub-assemblies and components revealed increases by approximately 2% up to 3% over the five-year term with the exception of typical base unit pricing for pre-bored ties, which revealed increases of 4% up to 4.80%.

Their 9% price increase is primarily due to the variation in the currency exchange from USD to CDN, which has a significant impact in the calculation of pricing, whereby the current rate is 1.2553 (as of October 14, 2021). However, there are other contributing factors such the increase in steel prices, which is the main material used to manufacture STW and the increased price of ties (used to manufacture full turnout assemblies) due to the TTC's Specification revision from wood to composite material. The cost to use composite ties can be considered as major long-term costs savings due to significantly longer lifespan of composite ties versus wood ties because they do not rot.

Nortrak is the incumbent for the supply of subway STW and has performed the work in a satisfactory manner. Nortrak are recommended for award of a contract covering a five-year term, in the total upset limit amount of $20,000,000 USD (which is equivalent to

$25,106,00 CDN) based on the TTC's preliminary estimate of the value of the work. In the event the contract is extended, the appropriate authorization will be obtained at that time, in accordance with the TTC's Authorization for Expenditures and Other Commitments Policy.

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Signature

Fortunato Monaco
Chief Infrastructure and Engineering Officer

Attachments

Attachment 1 – Appendix 'A' Supply Trackwork for up to a Five-Year Term: Bid Summary

Appendix 'A'

Supply of Special Trackwork for up to a Five-Year Term

Bid Summary

Item	Description	Bid Price (USD) (Original offer)	Bid Price (USD) (Negotiated Offer)
1	Subway Full Turnout Supply	$19,412,592.05	$18,622,197.73
2	Maintenance and Operations Manual for Subway Full Turnout Supply	$96,153.96	$96,153.96
3	Subway Retrofit Switch Kit Supply Summary	$4,720,730.94	$4,616,450.02
4	Frog Refurbishment	$1,601,736.58	$1,591,706.70
TOTAL Bid Price		$25,831,213.53	$24,926,508.41